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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,453	09/28/2004	Jeroen Arnoldus Leonardus Johannes Raaymakers	NL 020233	2235

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EXAMINER	
GUPTA, PARUL H	
ART UNIT	**PAPER NUMBER**
2627	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/509,453	RAAYMAKERS, JEROEN ARNOLDUS LEONARDUS J	
	Examiner	Art Unit	
	Parul Gupta	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 8-12* is/are rejected.

7)☒ Claim(s) *7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-12 are pending for examination as interpreted by the examiner, based on the amendment filed on 10/17/06.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 4, 6, 8-10, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al., US Patent 6,714,496 in view of Kusano et al., US Patent 5,206,848, further in view of Hajjar et al., US Patent 5,627,808.

Regarding claim 1, Park et al. teaches a tilt control device for controlling a radial tilt of a recording surface of an optical disc with respect to an optical recording/reproducing beam (see abstract), said tilt control device comprising: control means for generating two focus controlling outputs (FET1 and FET2); and actuating means (inherent structure that moves element 20 in the focusing direction and element 40 of figure 5, which is a "tilt motor" as explained in column 7, line 55) for controlling a focusing state of the optical recording/reproducing beam based on said two focus controlling outputs (FET1 and FET2). Park et al. does not but Kusano et al. teaches actually tilting the beam instead of the disk (column 1, lines 54-60). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of tilting the beam instead of the disc as taught by Kusano et al. into the system

of Park et al. The motivation would be to contribute to a compact design of the pickup and lower the manufacturing cost (column 1, lines 35-39 of Kusano et al.). Park et al. in view of Kusano et al. does not but Hajjar et al. teaches that said control means determines a radial tilt value based on a differentiation of focus control values obtained at different radii of said optical disk (column 3, lines 45-55). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of storing a mean value determined in the given way to be used in tilt control as taught by Hajjar et al. into the system of Park et al. in view of Kusano et al. This would serve to fully compensate for cross-track tilt that may be present between the media and the optical head (column 1, line 62-column 2, line 4 of Hajjar et al.).

Regarding claim 9, Park et al. teaches an optical disc player comprising a tilt control device as claimed in claim 1 (shown in figure 5).

Regarding claim 10, Park et al. teaches a tilt control method for controlling a radial tilt of a recording surface of an optical disc with respect to an optical recording/reproducing beam, said tilt control method comprising the steps of: generating a focus controlling output and a tilt controlling output (FET1 and FET2 from element S20 of figure 1); and controlling a focusing state of the optical recording/reproducing beam and the radial tilt based on said focus and tilt controlling outputs (column 2, lines 9-35), characterized in that said method further comprises the step of: determining a radial tilt value based on a differentiation of focus control values (FET1 and FET2). Park et al. in view of Kusano et al. does not but Hajjar et al. teaches that said control means determines a radial tilt value based on a differentiation of focus control values obtained

at different radii of said optical disk (column 3, lines 45-55). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of storing a mean value determined in the given way to be used in tilt control as taught by Hajjar et al. into the system of Park et al. in view of Kusano et al. This would serve to fully compensate for cross-track tilt that may be present between the media and the optical head (column 1, line 62-column 2, line 4 of Hajjar et al.).

Regarding claim 4, Hajjar et al. teaches the device as claimed in claim 1, characterized in that said control means ("control actuator") positions a sledge (optical head of element 9 in figure 6 is designed to move to control tracking to serve the same function as the sledge) at at least two different radial positions, controls said actuating means to adjust the focus, and measures said focus control values at said at least two different radial positions (column 3, lines 45-50).

Regarding claim 6, Hajjar et al. teaches the device as claimed in claim 1, characterized in that said control means generates said focus controlling outputs based on measured mean focus control values and corresponding radial steps between two measurements (column 3, line 45 -column 4, line 4). The idea of finding the mean based on various measurements from different radial positions is given in column 1, lines 43-61. The given section refers to taking measurements at different radial positions to find calibration radii. Then, a signal representative of the focus based on the radius is determined. The concept of finding a representative based on the radial position serves the same purpose as the applicant.

Regarding claim 8, Hajjar et al. teaches the device as claimed in claim 1, wherein said device further comprises a tilt table ("LUT" of column 4, lines 5-21) for storing an information indicating mean disc tilt values and corresponding radial positions in figures 3, 4, and 5.

Regarding claim 12, Hajjar et al. teaches the method as claimed in claim 10, characterized in that said focus controlling step comprises using a mean focus controlling output for tilt control (column 2, lines 25-33). The idea of finding the mean based on various measurements from different radial positions is given in column 1, lines 43-61. The given section refers to taking measurements at different radial positions to find calibration radii. Then, a signal representative of the focus based on the radius is determined. The concept of finding a representative based on the radial position serves the same purpose as the applicant.

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. in view of Kusano et al. in view of Hajjar et al., further in view of Morimoto, US Patent 6,266,301.

Regarding claim 3, Park et al. in view of Kusano et al. teaches the device as claimed in claim 1 but does not teach the further limitations of claim 3 of PID controller outputs.

Morimoto teaches a device characterized in that said focus controlling outputs are Proportional Integral Derivative PID controller outputs (shown in figure 10 and explained in column 7, lines 15-22).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of PID controller outputs as taught by Morimoto into the system of Park et al. in view of Kusano et al. in view of Hajjar et al. This would serve the purpose of lowering costs (column 2, lines 39-41 of Morimoto).

4. Claims 2 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. in view of Kusano et al. in view of Hajjar et al., further in view of Nagasato, US Patent 6,181,670.

Regarding claims 2 and 11, Park et al. in view of Kusano et al. in view of Hajjar et al. teaches the device and method as claimed in claims 1 and 10 but does not teach the further limitations of claims 2 and 11 of a split coil arrangement.

Regarding claim 2, Nagasato teaches in figure 7 the device as claimed in claim 1, characterized in that said actuating means comprises a split focus coil arrangement for providing focus and tilt adjustment (done by elements 112 and 114), and said control means supplies said two focus controlling outputs (currents sent to drive each coil) to respective coils of said split focus coil arrangement.

Regarding claim 11, Nagasato teaches the method as claimed in claim 10, characterized in that said controlling said focusing state step comprises using a split coil arrangement arranged to provide a focus adjustment, said focus and tilt controlling outputs (currents) being supplied to respective coils of said split coil arrangement (column 12, lines 14-26).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of split coil as taught by Nagasato into the system of

Park et al. in view of Kusano et al. in view of Hajjar et al. This would serve to provide an objective lens driving device capable of efficiently and quickly correcting the tilt of an objective lens relative to a signal recording surface of an optical disk so that the comatic aberration of a spot formed by a light beam on the signal recording surface of the optical disk is reduced (column 2, lines 55-62 of Nagasato).

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. in view of Kusano et al. in view of Hajjar et al. as applied to claim 1 above, and further in view of Motosyuku et al., US Patent 5,602,566.

Park et al. in view of Kusano et al. in view of Hajjar et al. teaches all of the limitations of claim 1.

Park et al. in view of Kusano et al. in view of Hajjar et al. does not teach the limitations of claim 5.

Motosyuku et al. teaches a device according to claim 1, characterized in that said control means is arranged to set a mean disc tilt value in a tilt register (column 7, lines 32-50). The device taught records the tilt angle value of a processor into a register. This is similar to recording the tilt value of a disc as both inventions relate to fixing errors caused by tilt, although they are for two different devices.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the recording of the mean disc tilt value previously calculated into a tilt register as taught by Motosyuku et al. into the system of Park et al. in view of Kusano et al. because it is well known in the art that registers are reliable storage means for values that must be used in other calculations.

Allowable Subject Matter

6. Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The claim is allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose a mean disc tilt value being obtained based on the equation of the claim that refers to $r_\beta = \frac{G_c c_t \Delta r_f}{c_f (a_1 + a_2) \Delta R}$.

The following is a list of the closest prior arts that were noted:

Hajjar et al., US Patent 5,627,808 teaches the equation $Cb = (Vb - Vc)/(Rb - Rc)G1$ at the bottom of column 3. Although the equation is used for the same purpose of determining the tilt signal, Hajjar et al. uses a different method.

Response to Arguments

7. Applicant's arguments with respect to the claimed invention have been considered and are persuasive. Response to arguments that were not persuasive are given below.

Applicant claims that the signals provided by Park et al. are time measurements and not focus controlling outputs. The examiner disagrees. As signals FET1 and FET2 are being used to control the focusing, they are focus controlling outputs.

Applicant claims that Morimoto does not supply that which is missing from Park et al. The examiner disagrees. Morimoto is relied upon for the use of a PID controller.

Applicant claims that Nagasato does not comprise a split focus coil arrangement in elements 112 and 114 that each receive a driving current supplied by the focus controlling outputs. The examiner disagrees. Each of elements 112 and 114 are shown to be a split coil arrangement as given in figure 7. The driving current used to drive each focus coil is a focus controlling output.

Applicant claims that Hajjar et al. merely compensates for the radial tilt instead of correcting it. The examiner disagrees. By compensating all of the elements around the device, Hajjar et al. is essentially correcting the error of the cross-track tilt between the beam and the disc. The device as a whole corrects the tilt error.

Applicant claims that Motosyuku et al. is not analogous art and does not determine or store a mean tilt value in a register, nor does it supply what is missing from Hajjar et al. and Park et al. of the two focus controlling outputs nor actuating means as claimed. The examiner disagrees. As seen above, Hajjar et al. and Park et al. teach the two focus controlling outputs and the given actuating means. Motosyuku et al. was already given to be a different device with merely a similar method of calculating and storing tilt values. Column 7, lines 32-50 of Motosyuku et al. explain how a tilt value is stored to be retrieved later to be used by the device.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Parul Gupta whose telephone number is 571-272-5260. The examiner can normally be reached on Monday through Thursday, from 8:30 AM to 7 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Korzuch can be reached on 571-272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PHG
12/26/06

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